The Availability of

Wireless Telecommunications Services

In Tennessee

Prepared by the

Tennessee Regulatory Authority

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Senate Joint Resolution 134, as amended, (SJR 134) from the Tennessee General Assembly's 2001 Session directed the Tennessee Regulatory Authority (TRA) to conduct a study on the availability of wireless telecommunications service in rural and other low population areas of Tennessee. The following issues were identified specifically:

(1) The cost of erecting additional towers to extend wireless service;

(2) The feasibility of state and local government participation in erecting additional towers;

(3) The feasibility of participating in federal initiatives, interstate compacts and public-private partnerships to facilitate the erection of new towers; and

(4) All other aspects of wireless telecommunications service that may affect coverage areas.

This report finds that the majority of the population and the geographic area of the state have access to wireless telecommunications service. The TRA examined investment and tower location information from the Comptroller of the Treasury and the Federal Communications Commission, as well as coverage maps supplied by a number of wireless service providers. These indicate that the urban areas and the Interstate highway corridors have nearly complete coverage, as do certain major state and US highways, such as US 79 from Memphis to Clarksville. Every county in the state, except Hancock county, has some investment in wireless assets; every county, except Hancock and Meigs counties, has at least one cellular telecommunications tower. The Appendices to this report contain maps and data showing the details of this information.

Nevertheless, a few areas of the state appear to lack complete coverage for wireless telecommunications. In West Tennessee, examples include parts of Lauderdale, Weakley, Henry, Benton, and Humphreys counties, as well as parts of Chester, Decatur, Hardin, Henderson, Perry, and Wayne counties. On the Cumberland Plateau, parts of Fentress, Overton, Pickett and Scott counties are examples of sparse coverage. In East Tennessee, parts of Claiborne, Hancock and Hawkins counties as well as parts of Monroe, Carter, Cocke, Greene, and Johnson counties are examples of less than complete coverage.

Further, the cost of erecting towers for the provision of wireless service may not be the biggest obstacle to extending service into unserved areas. While the current cost of putting up a tower averages about $200,000 nationwide, the investment in electronic equipment needed to provide a wireless service may be as much or more than the amount invested in towers. In most counties, the amount of gross investment in electronics for wireless telecommunications greatly exceeds the corresponding dollar amount of gross investment in land, towers, and buildings. For the state as a whole, wireless telecommunications companies' investment in land, towers and buildings totals $219 million, while investment in related electronics totals over $767 million. In part, this reflects the sharing of towers among multiple wireless service providers.

The report finds no legal barriers to the construction or ownership of towers by entities other than licensed wireless service providers, although the Tennessee Constitution requires that any government "subsidy" of wireless towers must serve a public purpose. All entities face the same possibility of local citizens' opposition to certain tower locations, of course. The FCC limits the provision of wireless services to

licensed providers and all the licenses available for Tennessee have been assigned. The FCC exercises no jurisdiction over towers for the provision of wireless services, however, and a growing business of constructing towers for the purpose of leasing space on them to licensed wireless providers has developed. Thus, state and local government entities are not restricted from constructing towers for the provision of wireless service to serve a public purpose, but a licensed provider would have to provide the service regardless of the ownership of the towers involved.

Wireless telecommunications providers may also apply to receive federal universal service funds for providing service in high-cost areas by becoming Eligible Telecommunications Carriers (ETCs), although none have yet done so in Tennessee. The areas of the state receiving federal high-cost support in 2001 represented only 263,000 telephone lines out of more than 3.0 million telephone lines state-wide. Within the high-cost areas, federal support to wireline telephone companies ranged from less than $2.00 per line per month to over $8.00 per line per month. Thus far, this level of federal financial support has not enticed any wireless providers to apply for ETC status in Tennessee.

In conclusion, no additional subsidies for the provision of wireless service in Tennessee are recommended at this time, although continued monitoring of wireless availability is advised. The U.S. consumer market for wireless telecommunications is relatively new and continues to grow rapidly. This suggests that the existing incentives to expand service areas to gain additional customers are sufficient. The technology of wireless telecommunications also is rapidly progressing, creating a moving target for any subsidy system. In the future, if growth in wireless services subsides and significant

areas remain unserved, and potential universal service funding proves inadequate, additional government action to encourage expansion of wireless service coverage may be justified.

Introduction

This report has been compiled in response to Tennessee Senate Joint Resolution 134, which directs the Tennessee Regulatory Authority to conduct a study relative to the provision of adequate wireless telecommunications service in rural and other low-population areas throughout the State. This resolution also directs the TRA to consider : (1) the cost of erecting additional towers to extend wireless service; (2) the feasibility of state and local government participation in erecting additional towers; (3) the feasibility of participating in federal initiatives, interstate compacts and public-private partnerships to facilitate the erection of new towers; and (4) all other aspects of wireless telecommunications service that may affect coverage areas. An amendment to the resolution requires the TRA to consult with the Tennessee Emergency Communications Board to ensure compatibility of the TRA's recommendations with the provision of wireless enhanced 911 service and with standards established for local emergency communication districts.

The sections that follow present the history, the current and future uses, and the regulation of wireless telecommunications, as well as possible universal service funding of wireless services. The report then turns to the availability of wireless service in Tennessee, the cost of constructing additional towers, and a policy analysis of government subsidies for the expansion of wireless services. In conclusion, the report advises that any new government subsidy program is premature at this time. The market for wireless services continues to grow, the technology continues to advance, the opportunities for funding wireless service in high-cost areas of the state through federal

or state universal service funds remain pending before regulatory agencies, and the areas covered by wireless telecommunications providers may continue to expand.

The U.S. Wireless Industry

The American wireless (mobile) telephone market has grown explosively over the past few years. Wireless telephone subscribership in the Unites States doubled in just three years, growing from 49 million in June, 1997 to more than 97 million in June, 2000.[1] An April, 2000 Gallup poll showed that half of all Americans own a cell phone, and among the owners, about two-thirds use their cell phone at least several times a week. Among non-owners, 29% say they expect to own a cell phone within the next five years while an additional 22% say they expect to own a cell phone at some point in the future. In contrast, 47% of non-owners, about 25% of Americans, say that they will never own a cell phone.[2]

Wireless technology is not new. AT&T introduced the first mobile telephone in 1946 and deployed the service in 25 U.S. cities the next year.[3] Growth was slow, as the state of the technology allowed only one conversation per channel.[4] Mobile services generally had only a few hundred customers each, and there were long delays in call connection. Potential subscribers to the service were kept on waiting lists for years. A change in the regulatory stance of the Federal Communications Commission (FCC) in

[1]Baker, Christopher A. & Ann M. Jackson. "Understanding Consumer Use of Wireless Telephone Service." AARP Public Policy Institute. December, 2000.
[2]Moore, David W. "Half of All Americans Own a Cellular Phone." The Gallup Organization. April 26, 2000.
[3]U.S. Department of Commerce, National Telecommunications and Information Administration. *Survey of Rural Information Infrastructure Technologies*. September, 1995, p. 4-23.
[4]A channel is a combination of two radio frequencies. One frequency carries voice signals to the wireless telephone, and the other frequency carries the voice signals from the wireless telephone to the wireless network.

1968 ushered in new research in mobile technology. The amount of broadcast spectrum[5] available for use with mobile telephones is limited, and it was severely limited by the FCC prior to 1968. In their 1968 decision, the FCC stated "if the technology to build a better mobile phone system works, we will increase the cellular phone frequencies allocation, freeing the airwaves for more mobile phones."[6] System capacity continued to restrain the general commercial use of cell phones until the mid 1980's. As late as 1976, when AT&T had 44,000 mobile subscribers, 20,000 would-be subscribers had put their names on a 5 to10 year waiting list.[7]

Commercial cellular telephone service, launched in 1982, offered significantly more system capacity. Earlier mobile telephone services employed a single high-powered transmitter to send and receive radio signals in an area up to 60 miles in diameter, but cellular networks used multiple low-powered transmitters to cover the same area, with each serving a "cell" that ranged from 2 to 40 miles in diameter.[8] This design alteration allowed frequencies to carry more than one conversation at a time, thus increasing the system's capacity. Still, demand quickly caught up with the new capacity. The cellular telephone industry grew from 91,000 subscribers in 1984 to more than 2 million subscribers in 1988.[9]

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[5]Wireless communications devices, like radios and television sets, send and receive their signals via the airwaves. Using different frequencies to send and receive information allows simultaneous use of the airwaves by many devices for many purposes. The available frequencies are referred to as the spectrum of frequencies, and the assignment of portions of this spectrum to different uses and different service providers is one of the more controversial aspects of regulation surrounding the wireless industry.

[6]Affordable Phones. "History of Cellular Phones." Available at www.affordablephones.net/HistoryCellular.htm Accessed on January 9, 2002.

[7]Gibson, Stephen W. *Cellular Mobile Radiotelephones*. Englewood Cliff: Prentice Hall, 1987.

[8]Baker, Christopher A. & Ann M. Jackson. "Understanding Consumer Use of Wireless Telephone Service." AARP Public Policy Institute. December, 2000

[9] Cellular Telecommunications Industry Association, Semi-Annual Wireless Industry Survey.

This growth is attributable to two factors: technological improvements and regulatory decisions. Integrated circuits and microprocessors allowed mobile telephones to become smaller, clearer, and more easily used outside of an automobile. At the same time, the FCC established a national advanced mobile phone service (AMPS) standard that all cellular systems and telephones had to meet. This decision facilitated the creation of a nationwide compatible cellular network.

By the late 1980's, however, capacity was becoming strained, especially in large metropolitan areas. The FCC authorized the use of digital signals for mobile telephone service, which require less space on a channel than an analog signal, ushering in a new way for companies to increase subscriber capacity. Digital technology offers the additional benefits of more services (such as caller ID, voice mail and text messaging) and greater security for conversations (eavesdropping is more difficult). Digital technology also allowed two new services to grow: Personal Communications Services (PCS) and Specialized Mobile Radio (SMR), each with its own portion of the broadcast spectrum. These new services, combined with both analog and digital cellular services, led to the rapid service growth and technological evolution that have produced today's wireless telephone market.

The terms "wireless" and "cellular" are among many used to describe radio connections to the public telephone network. Many products and services fall under the definition of "wireless," including cellular, PCS, SMR, paging and messaging service, and text and voice Internet links, among others. This report uses the terms "cellular," "cell," "wireless," and "mobile" interchangeably in reference to telephone service provided through cellular, PCS or SMR technology. There are some differences in the

way in which service is provided for different types of wireless telephony, and there are differences between analog and digital services, but these differences are not readily apparent to consumers, who tend to view the three types of services interchangeably.[10]

The term "wireline" refers to historical, landline based telephone service. It is the service that goes directly to the home or business through telephone lines installed in a fixed customer location. One type of wireless service, "fixed wireless", is considered the closest wireless relative to wireline service. Fixed wireless systems attach radio transmitters to a customer's premises that communicate with the provider's central antenna site. This technology can function as a replacement for the "last mile" of copper wire in wireline systems that has traditionally provided individual customers with telecommunications services.

In its annual report on the state of competition in the wireless industry, the FCC states that 91% of the total U.S. population live in counties with access to three or more different providers offering mobile telephone service.[11] Service offerings within a county do not, however, necessarily translate into full county service coverage. Nevertheless, the U.S. Department of Labor Bureau of Labor Statistics reports that the price of personal mobile telephone service declined by 12.3% during 2000.[12]

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[10] Baker, Christopher A. & Ann M. Jackson. "Understanding Consumer Use of Wireless Telephone Service." AARP Public Policy Institute. December, 2000.

[11] Federal Communications Commission. "Sixth Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services." June 20, 2001.

[12] Bureau of Labor Statistics. "Consumer Price Index: Frequently Asked Questions." Unites States Department of Labor. www.bls.gov/cpifaq.htm The Bureau of Labor Statistics began tracking cellular telephone service as an element of the Consumer Price Index (CPI) in December of 1998. In 2000, the Cellular CPI decreased by 12.3% while the CPI as a whole increased by 3.4%. The relative cost of cellular service among a typical consumer's purchases therefore decreased by more than 12.3%.

How People Use Their Cell Phones

A December, 2000 survey by the AARP Public Policy Institute[13] found that 49.6% of adult consumers surveyed reported having and using a cell phone. The largest service provider is AT&T, followed by Cellular One, AirTouch, Bell Atlantic and GTE. 69.8% of cell phone users use their phones both to make and receive calls. 26.6% use their cell phones only to make calls. Only 1.4% use cell phone solely to receive calls. Among those who use their phones to make calls, the largest group (37.2%) makes 1 to 5 calls per week. 37.2% make only local calls, while 56.4% make both local and long distance calls.

Wireless service prices also vary; 29.9% of cell phone users report a monthly price of up to $20, 47.1% pay between $21 and $50 monthly, and 8.1% pay more than $50 per month. The most popular reasons for having a cell phone are security in case of an emergency (36.4%), the convenience of the ability to make calls from anywhere (34.6%), and business or work use (10.6%). The call plan features most in demand are flat rate for peak and off-peak times (34.5%), no roaming charges (25.3%), free calls on nights and weekends (14.9%), and no long distance charges (14.2%). 83.2% of cell phone users say they have never avoided making a call on a cell phone because of privacy concerns, and 81.1% say they have never switched cell phone companies to get a cheaper rate.

67.7% of cell phone users said that their cell phone was very difficult to operate, while another 22.4% said it was somewhat difficult. Only 11.1% of cell phone users

[13]Baker, Christopher A. & Ann M. Jackson. "Understanding Consumer Use of Wireless Telephone Service." AARP Public Policy Institute. December, 2000.

have considered replacing their wired home phone with a cell phone, while 88% have never considered this option.

Wireless vs. Wireline

The vast majority of wireless telecommunications users do not give up their wireline telephone service when they receive wireless service. According to a report in the *Nashville Business Journal*, 3% of wireless telephone customers have no wireline connection at home. The author quotes a Yankee Group survey, which also predicts that the wireless portion of telephone conversation minutes, about 6.5% in 1999, will grow to 41% by 2005. Cricket Communications, a subsidiary of Leap Wireless International, Inc., offers unlimited local calling plans in parts of the south and southwest for as little as $30/month. Although this rivals the price of landline service, Cricket reports that only 7% of its customers have no wireline connection at home.

Most wireless users still say that they only use wireless telephones when land lines are unavailable. Nonetheless, the number of wireless calls made from the home has increased from 6% in 1998 to 15% in 2000. Industry experts speculate that wireless telephones are replacing second wireline telephone lines in many households, especially when the second line was for children. [14] Additional predictions say that, as roaming and long distance services become part of standard wireless service plans, many wireless subscribers will use their cell phones to make long distance telephone calls, significantly altering telecommunications markets.

[14]Sarles, Judy. "Wireless Users Hanging Up On Landline Phones." *Nashville Business Journal.* February 2, 2001.

This evidence suggests that consumers currently view wireless telecommunications service as a complement to their wireline service and not as a direct substitute. Future changes in prices and calling plans by wireless providers, however, may alter this pattern.

Fixed Wireless Voice and Data Services

In a fixed wireless access system, a provider attaches a radio transmitter to a customer's premises that communicates with the provider's central antenna site. The technology functions as a replacement for the "last mile" of copper wire that has traditionally provided individual customers with telecommunications services, thus allowing a wireless provider to compete with a traditional wireline provider. Fixed wireless technology can provide broadband services faster and for less money than wireline technologies. Fixed wireless operators claim that their networks have a significantly lower cost structure than wireline systems because they are free of many of the installation and maintenance costs incurred in wiring a building. In addition, unlike a wireline network, in which an entire market must be wired before initiating service, a wireless network can be deployed incrementally as more customers are added. Fixed wireless systems can be an efficient means of providing basic telephone, data and broadband services to isolated areas and other market segments that are not currently reached by traditional telephone networks.[15]

[15]Federal Communications Commission. *Sixth Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*. June 20, 2001.

Regulation of Wireless Telecommunications

Under current state and federal law, the Tennessee Regulatory Authority (TRA) has no jurisdiction over wireless service providers. For this reason, the data reported here are somewhat limited, as providers have no obligation to furnish company information to the TRA. To the extent that wireless companies are regulated, such oversight is provided by the FCC, which has preempted state regulation of wireless service providers.

The FCC licenses wireless companies for specific geographic areas. In addition, the FCC allocates portions of the frequency spectrum to companies so that they may provide service in those areas. Unlicensed providers may also sell wireless services, but they may not interfere with any licensed providers. Some of the lower-band frequencies are unassigned and are used by unlicensed providers for such services as two-way radios and cordless phones. The FCC must approve all transfers of wireless licenses.

Cellular carriers are required by the FCC to offer service in at least one-third (1/3) of their service areas within five years of licensure and at least two-thirds (2/3) of their service areas within 10 years of licensure. The 10-year deadline should have been reached now for nearly every county in Tennessee as 95% of cellular service areas were assigned by the end of 1991. PCS licenses are more recent and are based on different service area boundaries. The FCC auctioned the rights to PCS spectrum by geographic area, rather than allocating them, and similar coverage requirements were not imposed.

The FCC asserts no control over prices and rates or consumer complaints related to wireless service providers. The FCC refers consumers with complaints to local Better Business Bureaus and Chambers of Commerce, or to state regulators in those states that choose to regulate wireless business practices. Neither does the FCC control siting

requirements or other aspects of wireless tower locations. The siting of towers may be regulated, but not prohibited, by state and local governments.

Wireless and Universal Service

On October 26, 1998, the FCC provided interim percentages for calculating inter- and intrastate revenues for universal service contribution purposes to wireless carriers. The FCC also issued an NPRM seeking comments on separation of inter- and intrastate revenues, interstate revenue percentages based on the type of wireless service provided, requirements for wireless and cable operators regarding services eligible for universal service support, and the amount of local service these carriers should be required to provide.[16]

While the FCC ponders these questions, and while various House and Senate bills addressing these and similar issues are drafted, wireless carriers are receiving Eligible Telecommunications Carrier (ETC) status in several states. Wireless carriers have applied for, and received, ETC status in order to provide services to schools, libraries and health care providers under programs specifically targeted to those entities. In addition, some wireless carriers have moved in to compete with rural ILECs in the provision of both basic and advanced services. Western Wireless has been the most aggressive company in this move toward wireless rural competition, and, in September 1999, it became the first competitive telecommunications carrier in the nation to be designated an ETC for purposes of universal service support in areas served by rural telephone

[16]National Exchange Carrier Association. *A Sampling of Critical Issues*. http://www.lawbookexchange.com/neca/neca2.html Accessed on January 17, 2002.

companies.[17] As of May, 2001, Western Wireless has received ETC designation in 12 states.[18]

A recent FCC Order (CC Docket No. 96-45 Memorandum Opinion and Order Adopted September 27, 2001) made Western Wireless Corporation an ETC for the Pine Ridge Reservation in South Dakota. As an ETC for this area, Western Wireless will qualify for universal service subsidies for providing telephone service to underserved areas. The FCC decision stated that the decision to make a carrier an ETC rested with either the state public utility commission or the FCC depending upon the circumstances. In this case, because of federal preemption in the case of tribal lands, the South Dakota Public Utilities Commission makes the decision for non-tribal members, while the FCC makes the decision for tribal members.

This move of wireless companies into the service areas of previously protected rural ILECs has increased the intensity of the debate around the obligations of ETCs. Some economists have argued that wireless companies are receiving universal service funds like rural ILECs, but that they are not required to submit to any universal service obligations or regulatory oversight. This, such economists say, amounts to "artificially induced" competition that undermines local telecom companies.[19] The Organization for the Promotion and Advancement of Small Telecommunications Companies (OPASTCO) submitted comments to the FCC in which they requested that ETCs be required to meet

[17]Business Wire. *Western Wireless Becomes First Carrier in the Nation to be Designated as an Eligible Telecommunications Carrier for Universal Service Funding in Rural Areas.* September 30, 1999. http://www.briggs.com/FSL5CS/cases/cases241.asp Accessed on January 17, 2002.

[18]House Committee on Small Business. "Eliminating the Digital Divide – Who Will Wire Rural America?" Prepared Remarks of Thorpe "Chip" Kelly, Western Wireless Corporation. May 24, 2001.

[19]Schultz, Paul. "Dealing for Universal Service Dollars: Competition in the Rural World." *Rural Telecommunications.* March-April, 2001. http://www.ruraltelecom.org/marapr01/perspect-b.html Accessed on January 17, 2002.

carrier of last resort obligations, and that wireless ETCs be reimbursed based on their own costs as opposed to the local ILEC's costs.[20]

Wireless Coverage By County in Tennessee

Wireless investment information by county was obtained from Ad Valorem Tax Reports filed with the Tennessee Comptroller of the Treasury Office of State Assessed Properties. The data reflect gross investment in towers, buildings and land, as well as in electronic equipment. A map reflecting investment by county is available in Appendix A. Only Hancock County showed no investment at all. Investment outside of cities was 37.9% of total investment, while metropolitan investment constituted 62.1% of the total. Only Davidson, Knox and Shelby Counties have investment in excess of $100 million. A brief summary of total investment per county is shown in Table 1.

Table 1: Total Wireless Investment by County

Less than $100,000	Hancock, Meigs
$100,000 to $1,000,000	Bledsoe, Claiborne, Clay, Decatur, Houston, Jackson, Johnson, Lake, Lewis, Moore, Perry, Pickett, Trousdale, Van Buren
$1,000,000 to $10,000,000	Bedford, Benton, Bradley, Campbell, Cannon, Carroll, Carter, Cheatham, Chester, Cocke, Coffee, Crockett, Cumberland, DeKalb, Dickson, Dyer, Fayette, Fentress, Franklin, Gibson, Giles, Grainger, Greene, Grundy, Hamblen, Hardeman, Hardin, Hawkins, Haywood, Henderson, Henry, Hickman, Humphreys, Jefferson, Lauderdale, Lawrence, Lincoln, Loudon, Macon, Marion, Marshall, Maury, McMinn, McNairy, Monroe, Morgan, Obion, Overton, Polk, Putnam, Rhea, Roane, Robertson, Scott, Sequatchie, Smith, Stewart, Tipton, Unicoi, Union, Warren, Wayne, Weakley, White
$10,000,000 to $100,000,000	Anderson, Blount, Hamilton, Madison, Montgomery, Rutherford, Sevier, Sullivan, Sumner, Washington, Williamson, Wilson
More than $100,000,000	Davidson, Knox, Shelby

[20]Organization for the Promotion and Development of Small Telecommunications Companies. *Comments of Organization for the Promotion and Development of Small Telecommunications Companies.* CC Docket No. 96-45, FCC 01-J-1, November 5, 2001.

Investment in a county does not necessarily translate into full wireless coverage for that county. Actual cellular tower locations are depicted on a map in Appendix B. PCS and SMR tower locations were unavailable. SMR is currently a very limited service, and Nextel is the major provider. PCS is growing quickly, but it is still much less common than cellular services. Coverage maps provided by facilities-based wireless providers in Tennessee, however, suggest that PCS and SMR services are not currently offered in any areas that do not also have cellular towers.

Service coverage maps were requested from facilities-based wireless carriers, but, while most responded with some coverage data, only about half actually provided a service area footprint. This information, as it was incomplete, could not be used to construct a map of service coverage areas in Tennessee. Coverage areas are instead approximated by a map of cellular tower locations, available in Appendix B.

An additional map, depicting estimated wireless coverage in Tennessee, is provided in Appendix C. This map was created by estimating the radius of coverage around the cellular and microwave towers shown in Appendix B. Towers vary in height, and the antennae on the towers do not always have the same range. Geographical variances can affect the broadcasting range around some towers. Some antennae are placed so that they broadcast in a 180° range, as opposed to the 360° range depicted. This map is intended to give the reader an idea of the current wireless coverage area in Tennessee, but it is not a scientific depiction of such.

The cellular tower location map and the coverage information that has been provided by companies paint the same picture. Metropolitan areas, including Memphis, Nashville, Knoxville, Chattanooga, Jackson, Clarksville and the Tri-Cities area in

northeastern Tennessee, are well-covered by cellular providers. In addition, cellular coverage generally includes the major interstate corridors (I-40 from Memphis to Knoxville, I-81 from Knoxville to the Tri-Cities, I-24 from Clarksville to Chattanooga, I-65 from the Alabama border to the Kentucky border, and I-75 from Chattanooga to the Kentucky border). Additional coverage appears to run along major US and state highways, with some (such as U.S. 79 from Memphis to Clarksville and U.S. 51 from Memphis to Union City and the Kentucky border) that appear to have complete coverage. Smaller companies (such as Yorkville Communications in northwest Tennessee) cover some of the less-populated areas, but, as the map in Appendix B shows, there are significant gaps in coverage in parts of many Tennessee counties.

Wireless Towers

Wireless tower construction and management is rapidly becoming an industry separate from the provision of wireless communications and data services. Wireless carriers are increasingly outsourcing not just design and construction of cell sites, but site acquisition, design of the Radio Frequency (RF) network, installation of network components, and, in some cases, long-term management of the network.[21]

The cost of a wireless communications tower varies with the height of the tower, the types of antennae to be installed on the tower, building permit fees and land/real estate prices. Wireless tower management company SpectraSite puts the average tower cost at $200,000. SpectraSite CEO Stephen Clark points out, however, that each tower can fit up to four tenants, and tenants pay about $18,000 to $20,000 per year in rent.

[21] Yankee Group. *Infrastructure/Facility Outsourcing: Third-Party Vendors Becoming Wireless Industries (sic) First Choice.* October 1, 1999. Abstract available online at

With approximately $80,000 per year in total revenue per tower, and only about $12,000 per year in maintenance and other recurring costs, gross profit margins per tower are in the 85% range.[22]

The state of technology in tower construction is rapidly improving. One of the biggest problems under investigation is interference and decreased signal range that can occur in bad weather. New types of networks, currently in the development and testing phases, may offer improvement. These networks make use of shorter, more densely located towers that send a stronger signal over a smaller area. These will be more likely to be useful in metropolitan areas, where the number of potential customers justifies the building of several towers. On the other hand, the quality that makes wireless a less expensive investment, the ability to connect areas to the network in small increments, is magnified by the smaller-tower network.

A concern for fixed wireless consumers is the line of sight requirement. The dish or microwave transmitter that is installed at the customer location must maintain a line of sight with a tower. Trees and existing structures can make this difficult. Cisco Systems, Nokia and Wave Wireless are among the companies that are in the testing phase of research on transmitters and transmission webs that can overcome the line of sight requirement.

Analysis: Legal Issues Related to Subsidies for the Expansion of Wireless Service

Article II, Section 31 of the Tennessee Constitution provides as follows:

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http://www.marketresearch.com/product/display.asp?ProductID=234433

[22] Rugaber, Chris. "SBC Deal Spotlights Wireless Tower Business." *The Motley Fool*. September 1, 2000. Available online at http://www.fool.com/news/2000/site000901.htm Accessed January 18, 2002.

> The credit of this State shall not be hereafter loaned or given to or in aid of any person, association, company, corporation of municipality: nor shall the State become the owner in whole or in part of any bank or a stockholder with others in any association, company, corporation or municipality.

This section prohibits the State from committing money to a project that is purely for the benefit of a private individual or company. The Tennessee Supreme Court has held that this section does not prohibit the State from issuing State debt when required to accomplish a State or public purpose. For example, the Supreme Court has upheld State action in issuing debt and providing the proceeds to hospitals owned by local governments and not-for-profit corporations, because the hospitals served a public purpose.[23] The Supreme Court has also upheld a State statute requiring the State to pay for relocating utilities located on the public rights-of-way when the facilities were displaced by highway construction.[24] The Court stated that "[u]tilities are an integral part of the full use of the public rights-of-way, all serving the public interest, and in their removal and relocation the public has a real and legitimate interest."[25]

State subsidy of cell tower construction through issuance of State debt could reasonably be viewed as serving a public purpose, since cellular telecommunications services perform the same function as telecommunications services provided by traditional utilities. This type of subsidy, therefore, appears not to violate Article II, Section 31.

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[23] *Bedford County Hospital v. Browning*, 225 S.W. 2d 41 (Tenn. 1949).
[24] *Pack v. Southern Bell Tel. & Tel. Co*., 387 S.W.2d 789 (Tenn. 1965).
[25] *Id*., at 793. Similarly, in an Opinion issued in 1996, the Attorney General concluded that the State's sale of $55 million in general obligation bonds toward building a stadium that would not be owned solely by the State, but by a sports authority created pursuant to statute, did not violate Article II, Section 31, on the basis that the debt issuance would serve a public purpose. Tenn. Op. Atty. Gen. No. 96-007, 1996 WL 34696 (January 22, 1996).

Analysis: Subsidies for the Expansion of Wireless Service

Although several pockets of unserved territory appear to exist in Tennessee, questions as to the continuing nature and severity of this phenomenon remain. The widespread use of wireless services is relatively new and subscribership is rapidly growing. This suggests that the market incentives for wireless service providers may be sufficient to continue the expansion of wireless coverage areas in Tennessee in the future.

Further, the level and nature of demand for the service in the unserved areas are unknown. Without demand information, any subsidy program could prove unjustified on cost-benefit grounds. For example, if $200,000 were spent to subsidize a new cell-tower, but only ten new customers are served, the resulting cost of $20,000 per additional customer appears unlikely to be offset by the benefits of wireless service, except in extremely rare, life-or-death situations. On the other hand, if several hundred additional customers could be served, some who might not otherwise have a telephone, then the expenditure may be justified.

The nature of the perceived policy problem, which is closely related to the nature of the demand for the service, plays a major role in determining the most effective way to implement any subsidy scheme. For example, if the problem is a lack of service in certain areas for *existing* wireless customers (such as travelers), then subsidy of the additional infrastructure investment needed to expand service to that territory may be effective. This could include the construction of towers along public rights-of-way. In this case, the additional revenues realized by the service providers may be insufficient to justify the investment required to expand the service. On the other hand, if the perceived

problem is that residents of the unserved area lack wireless service - or are unwilling to pay for the service in sufficient numbers at current prices - then a program to subsidize the purchase of wireless service may prove more effective. Under other circumstances, some combination of both policies might be appropriate.

Government subsidization, however, is not without risk. State government, and ultimately taxpayers, are at risk for loss of any subsidy for the construction of towers or for the provision of wireless telecommunications services. If demand fails to generate sufficient revenues for providers, then they may abandon the provision of the service. This leaves the state with a nearly worthless asset, for which the taxpayers must pay, even though it is not used and no benefits are realized. State funded low-interest loans or loan guarantees for the construction of towers, however, could limit this risk, but may also less-effectively attract providers to unserved areas.

Finally, both the federal universal service fund and any state-level universal service support mechanism created by the TRA may make subsidies available to wireless service providers in high-cost areas. The nature and amounts of the subsidies in the federal program remain in flux before the FCC, but wireless providers have qualified to receive funds in other states. In Tennessee, the TRA has two dockets pending related to the possible implementation of state universal service funding to providers of telecommunications services in areas that may be determined to require such aid. At this time, no wireless providers have applied for designation as an ETC in Tennessee, the necessary first step to receive any such funding.

Conclusion

Wireless telecommunications services have become valuable to many consumers, and the number of wireless telephone subscriptions is growing very quickly. Wireless technology is also changing rapidly, with digital lines now more common than analog lines, and cable Internet connections blurring the lines between the telecommunications and the cable television industries. Computer, television and telecommunications services will likely evolve into one market within the next several years, but the form that market will take, as well as the industry (or industries) that will dominate it, is not yet clear.

With the help of federal universal service funds, state regulatory policies in support of universal service, and Lifeline and LinkUp programs, all Tennesseans currently have access to affordable basic wireline telephone service. The advantage of wireless service is that it may provide telecommunications services, especially advanced broadband services, in rural or high-cost areas at lower cost than that of comparable wireline service. Tennessee could invite wireless carriers to apply for ETC status in order to take advantage of state programs to fund telephone service in high-cost areas. To encourage the deployment of broadband services in rural areas, Tennessee could include broadband in its rural universal service plan and allow qualifying wireless providers to receive state universal service funds to provide broadband in high-cost areas.

In addition, the legislature could authorize low- or no-interest loans to companies that construct and manage towers, and/or allow construction of towers on public rights-of-way. With payments to be made from tower revenues, these companies would be facing a low risk of losing money on the towers, and the State would limit its financial

obligation to paying only the interest on the loans. It is important, however, if the State takes such steps, to consider the effects on rural ILECs. The likely eventual deployment of full networks of fiber optic cable (including "last mile" connections) also calls into question the permanence of any fixed wireless broadband solutions. Technology may pave the way for wireless data transmission speeds that rival fiber optic speeds, but no current wireless technology can approach the transmission speeds achieved over fiber optic networks.

While wireless communications advances offer promise of a less expensive way to provide telephone service in rural areas, the time is probably not right for overt government intervention. This market should be observed for a few years. If the rate of new subscriptions slows significantly, and companies stop building new facilities in previously underserved areas, the State may wish to revisit this question. This also provides time for future federal or state universal service policies to take effect and, perhaps, mitigate the problem of unserved areas without further government action.

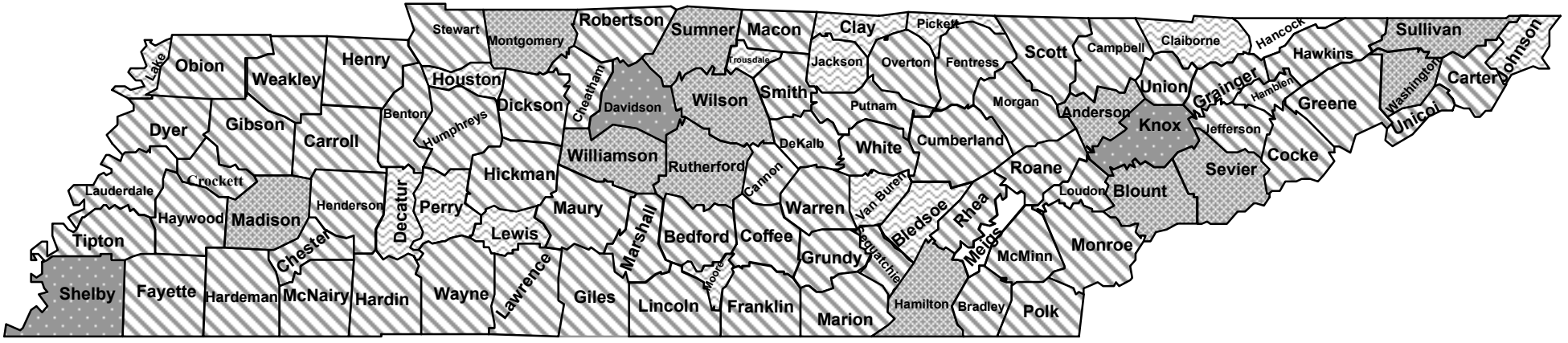
Appendix A

Tennessee Wireless Investment

By County:

Map

Tennessee Wireless Investment by County



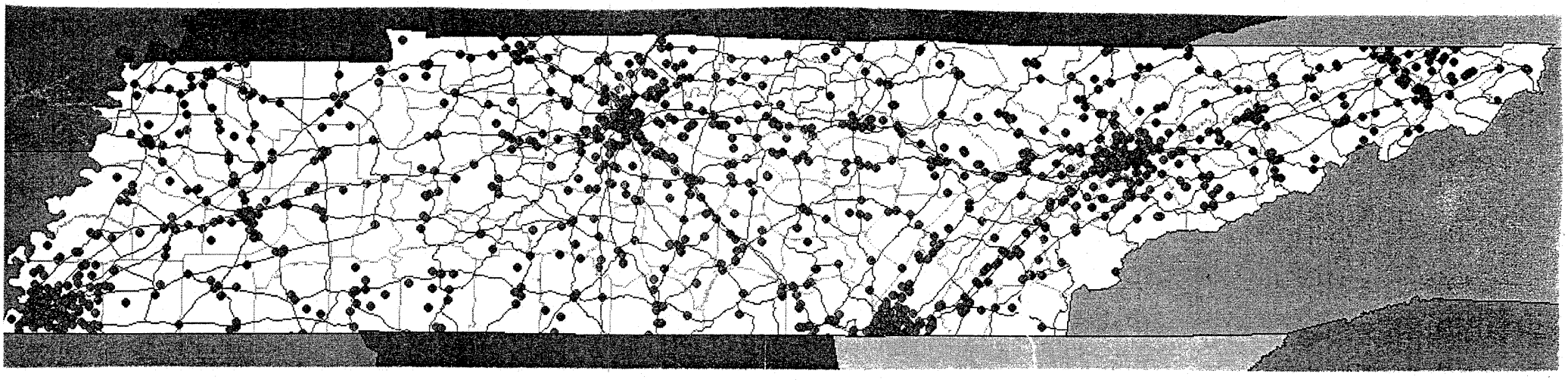
- Less Than $100,000
- $100,000 to $1,000,000
- $1,000,000 to $10,000,000
- $10,000,000 to $100,000,000
- More Than $100,000,000

Appendix B

Tennessee Cellular Tower Locations:

Map

Tennessee Cellular Tower and Microwave Locations



Darker lines represent major interstate and state highways.
Lighter lines outline the counties.

Source: FCC Wireless Telecommunications Bureau

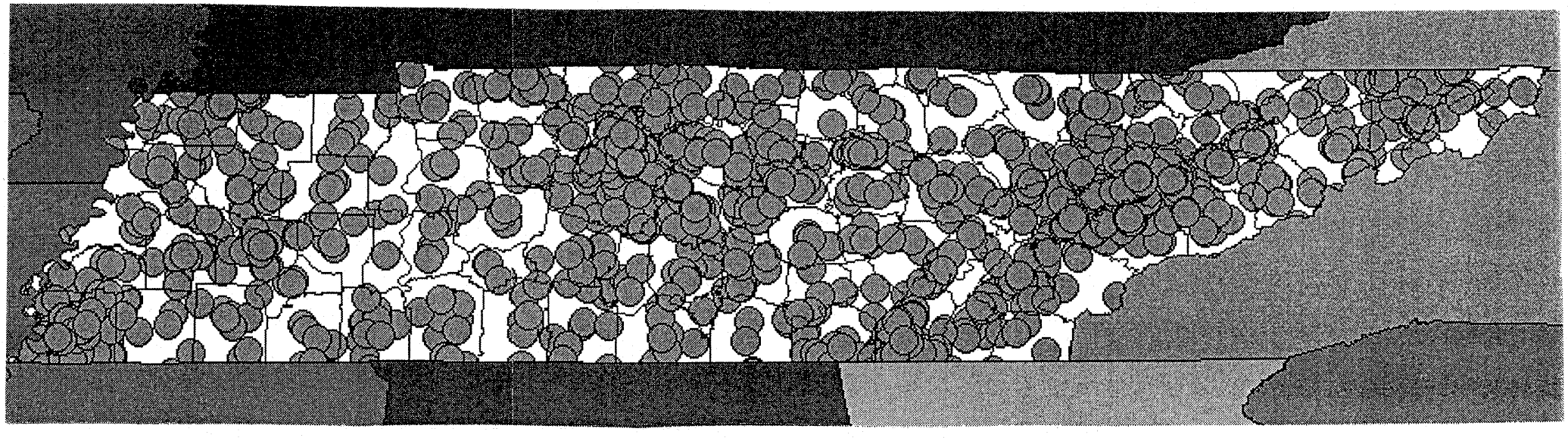
Appendix C

Estimated Wireless Coverage

in Tennessee:

Map

Estimated Wireless Coverage in Tennessee



Counties are outlined

Appendix D

Tennessee Wireless Investment

By County:

Table

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Anderson	$2,291,887	$2,627,429	$4,919,316	$2,653,641	$3,339,123	$5,992,764	$10,912,080
Bedford	$806,860	$371,495	$1,178,355	$3,721,672	$1,053,848	$4,775,520	$5,953,875
Benton	$448,969	$156,033	$605,002	$897,715	$244,034	$1,141,749	$1,746,751
Bledsoe	$21,032	$0	$21,032	$254,536	$0	$254,536	$275,568
Blount	$1,552,506	$3,297,536	$4,850,042	$1,541,024	$5,977,819	$7,518,843	$12,368,885
Bradley	$198,972	$346,277	$545,249	$1,877,504	$2,535,752	$4,413,256	$4,958,505
Campbell	$1,239,402	$209,642	$1,449,044	$2,971,410	$266,896	$3,238,306	$4,687,350
Cannon	$177,116	$101,363	$278,479	$1,068,049	$146,169	$1,214,218	$1,492,697
Carroll	$704,397	$85,289	$789,686	$1,774,342	$1,397,714	$3,172,056	$3,961,742
Carter	$1,040,721	$576,201	$1,616,922	$2,645,224	$1,658,820	$4,304,044	$5,920,966
Cheatham	$107,474	$476,860	$584,334	$2,145,763	$741,856	$2,887,619	$3,471,953
Chester	$276,763	$69,914	$346,677	$530,083	$377,693	$907,776	$1,254,453
Claiborne	$308,763	$0	$308,763	$659,571	$0	$659,571	$968,334
Clay	$0	$385,997	$385,997	$300,486	$247,376	$547,862	$933,859
Cocke	$1,058,657	$94,255	$1,152,912	$1,468,271	$127,977	$1,596,248	$2,749,160
Coffee	$503,725	$229,817	$733,542	$2,478,443	$1,455,865	$3,934,308	$4,667,850

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Crockett	$225,960	$41,631	$267,591	$795,207	$404,862	$1,200,069	$1,467,660
Cumberland	$2,597,820	$151,125	$2,748,945	$4,069,104	$1,079,711	$5,148,815	$7,897,760
Davidson	$4,430,362	$28,676,105	$33,106,467	$28,571,770	$122,167,196	$150,738,966	$183,845,433
Decatur	$109,401	$94,868	$204,269	$664,465	$121,596	$786,061	$990,330
DeKalb	$193,099	$261,049	$454,148	$849,048	$2,179,987	$3,029,035	$3,483,183
Dickson	$433,592	$95,711	$529,303	$4,100,597	$153,871	$4,254,468	$4,783,771
Dyer	$102,403	$79,958	$182,361	$2,168,256	$1,601,172	$3,769,428	$3,951,789
Fayette	$982,522	$0	$982,522	$3,069,783	$907,377	$3,977,160	$4,959,682
Fentress	$803,734	$0	$803,734	$4,015,056	$0	$4,015,056	$4,818,790
Franklin	$114,198	$403,856	$518,054	$548,503	$479,489	$1,027,992	$1,546,046
Gibson	$213,920	$357,514	$571,434	$2,327,500	$2,130,235	$4,457,735	$5,029,169
Giles	$261,480	$131,328	$392,808	$839,089	$908,218	$1,747,307	$2,140,115
Grainger	$593,911	$5,737	$599,648	$607,456	$345,311	$952,767	$1,552,415
Greene	$1,699,114	$1,405,818	$3,104,932	$3,546,538	$2,232,448	$5,778,986	$8,883,918
Grundy	$152,637	$31,586	$184,223	$324,928	$1,096,903	$1,421,831	$1,606,054
Hamblen	$828,502	$603,191	$1,431,693	$3,934,997	$1,406,595	$5,341,592	$6,773,285
Hamilton	$2,264,433	$12,282,549	$14,546,982	$10,801,104	$29,376,263	$40,177,367	$54,724,349

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Hardeman	$56,136	$292,698	$348,834	$789,349	$212,493	$1,001,842	$1,350,676
Hardin	$229,846	$118,902	$348,748	$1,151,776	$367,363	$1,519,139	$1,867,887
Hawkins	$1,284,134	$695,668	$1,979,802	$2,621,434	$1,299,142	$3,920,576	$5,900,378
Haywood	$713,768	$0	$713,768	$3,376,740	$1,215,241	$4,591,981	$5,305,749
Henderson	$979,117	$0	$979,117	$2,054,689	$1,243,625	$3,298,314	$4,277,431
Henry	$299,605	$12,565	$312,170	$2,246,101	$38,500	$2,284,601	$2,596,771
Hickman	$267,475	$151,810	$419,285	$1,429,239	$375,559	$1,804,798	$2,224,083
Houston	$110,768	$0	$110,768	$160,990	$0	$160,990	$271,758
Humphreys	$277,849	$339,447	$617,296	$643,998	$650,735	$1,294,733	$1,912,029
Jackson	$239,117	$0	$239,117	$273,354	$0	$273,354	$512,471
Jefferson	$2,035,253	$1,121,707	$3,156,960	$3,063,991	$895,766	$3,959,757	$7,116,717
Johnson	$79,060	$0	$79,060	$391,830	$0	$391,830	$470,890
Knox	$8,099,698	$16,840,555	$24,940,253	$28,152,738	$49,177,854	$77,330,592	$102,270,845
Lake	$0	$0	$0	$233,186	$0	$233,186	$233,186
Lauderdale	$52,160	$1,820,638	$1,872,798	$654,119	$732,959	$1,387,078	$3,259,876
Lawrence	$357,273	$53,630	$410,903	$1,310,682	$318,851	$1,629,533	$2,040,436

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Lewis	$0	$242,483	$242,483	$0	$549,760	$549,760	$792,243
Lincoln	$526,415	$0	$526,415	$1,345,269	$0	$1,345,269	$1,871,684
Loudon	$726,684	$1,308,021	$2,034,705	$1,629,321	$2,252,743	$3,882,064	$5,916,769
Macon	$337,150	$542,003	$879,153	$1,016,320	$246,743	$1,263,063	$2,142,216
Madison	$992,967	$2,095,464	$3,088,431	$4,535,889	$6,899,881	$11,435,770	$14,524,201
Marion	$854,309	$195,951	$1,050,260	$2,763,347	$1,303,262	$4,066,609	$5,116,869
Marshall	$465,695	$240,524	$706,219	$1,893,707	$298,734	$2,192,441	$2,898,660
Maury	$357,443	$1,137,921	$1,495,364	$2,092,802	$3,018,965	$5,111,767	$6,607,131
McMinn	$958,017	$1,076,143	$2,034,160	$3,151,057	$3,089,076	$6,240,133	$8,274,293
McNairy	$276,476	$453,309	$729,785	$805,760	$535,801	$1,341,561	$2,071,346
Meigs	$35,725	$0	$35,725	$0	$0	$0	$35,725
Monroe	$421,194	$143,650	$564,844	$2,256,915	$802,348	$3,059,263	$3,624,107
Montgomery	$552,491	$2,217,801	$2,770,292	$4,233,644	$6,101,109	$10,334,753	$13,105,045
Moore	$33,923	$97,156	$131,079	$225,113	$106,659	$331,772	$462,851
Morgan	$280,114	$156,200	$436,314	$1,028,107	$418,079	$1,446,186	$1,882,500
Obion	$121,453	$0	$121,453	$901,800	$709,158	$1,610,958	$1,732,411
Overton	$500,838	$0	$500,838	$890,818	$0	$890,818	$1,391,656

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Perry	$217,881	$24,231	$242,112	$314,450	$139,184	$453,634	$695,746
Pickett	$260,660	$0	$260,660	$158,326	$0	$158,326	$418,986
Polk	$333,967	$0	$333,967	$766,037	$0	$766,037	$1,100,004
Putnam	$1,588,872	$1,317,610	$2,906,482	$4,380,837	$2,365,003	$6,745,840	$9,652,322
Rhea	$354,094	$79,394	$433,488	$1,350,738	$0	$1,350,738	$1,784,226
Roane	$1,999,371	$702,229	$2,701,600	$3,960,942	$1,726,836	$5,687,778	$8,389,378
Robertson	$693,078	$584,597	$1,277,675	$3,694,245	$1,220,456	$4,914,701	$6,192,376
Rutherford	$898,371	$3,820,199	$4,718,570	$5,338,828	$10,664,811	$16,003,639	$20,722,209
Scott	$383,159	$0	$383,159	$745,898	$0	$745,898	$1,129,057
Sequatchie	$378,181	$0	$378,181	$731,708	$0	$731,708	$1,109,889
Sevier	$2,054,821	$2,065,332	$4,120,153	$4,764,229	$3,117,646	$7,881,875	$12,002,028
Shelby	$7,971,479	$27,386,760	$35,358,239	$22,683,220	$150,029,997	$172,713,217	$208,071,456
Smith	$902,276	$0	$902,276	$1,643,554	$0	$1,643,554	$2,545,830
Stewart	$129,053	$46,858	$175,911	$974,102	$186,076	$1,160,178	$1,336,089
Sullivan	$5,547,277	$3,987,957	$9,535,234	$21,152,430	$12,732,790	$33,885,220	$43,420,454
Sumner	$825,856	$1,434,915	$2,260,771	$5,610,490	$3,211,028	$8,821,518	$11,082,289

County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
	Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Tipton	$466,429	$0	$466,429	$2,682,765	$764,001	$3,446,766	$3,913,195
Trousdale	$0	$343,211	$343,211	$0	$156,119	$156,119	$499,330
Unicoi	$224,389	$360,993	$585,382	$830,866	$152,259	$983,125	$1,568,507
Union	$238,301	$377,145	$615,446	$720,230	$139,584	$859,814	$1,475,260
Van Buren	$27,388	$0	$27,388	$110,596	$166,979	$277,575	$304,963
Warren	$451,420	$108,282	$559,702	$1,785,953	$533,659	$2,319,612	$2,879,314
Washington	$3,544,652	$1,466,662	$5,011,314	$11,792,950	$3,524,906	$15,317,856	$20,329,170
Wayne	$135,548	$237,401	$372,949	$875,373	$190,259	$1,065,632	$1,438,581
Weakley	$145,273	$72,056	$217,329	$1,054,893	$1,210,204	$2,265,097	$2,482,426
White	$271,840	$0	$271,840	$1,220,423	$0	$1,220,423	$1,492,263
Williamson	$2,676,158	$4,756,671	$7,432,829	$8,813,892	$10,593,239	$19,407,131	$26,839,960
Wilson	$1,415,351	$2,375,294	$3,790,645	$7,189,965	$4,700,650	$11,890,615	$15,681,260

Appendix E

Tennessee Wireless Investment

By Company and County:

Table

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Memphis Cellular	Shelby	$2,723,557	$3,826,812	$6,550,369	$16,943,902	$54,322,708	$71,266,610	$77,816,979
Memphis Cellular	Tipton	$466,429	$0	$466,429	$2,248,369	$0	$2,248,369	$2,714,798
Memphis Cellular	**Total**	**$3,189,986**	**$3,826,812**	**$7,016,798**	**$19,192,271**	**$54,322,708**	**$73,514,979**	**$80,531,777**
Chattanooga Cellular	Hamilton	$1,024,205	$1,583,557	$2,607,762	$9,740,045	$13,630,598	$23,370,643	$25,978,405
Chattanooga Cellular	Marion	$209,703	$119,215	$328,918	$2,089,516	$1,145,423	$3,234,939	$3,563,857
Chattanooga Cellular	Sequatchie	$147,596	$0	$147,596	$624,111	$0	$624,111	$771,707
Chattanooga Cellular	**Total**	**$1,381,504**	**$1,702,772**	**$3,084,276**	**$12,453,672**	**$14,776,021**	**$27,229,693**	**$30,313,969**
GTE MobilNet (TN)	Anderson	$0	$106,876	$106,876	$0	$453,604	$453,604	$560,480
GTE MobilNet (TN)	Bedford	$237,425	$371,495	$608,920	$3,510,797	$1,053,848	$4,564,645	$5,173,565
GTE MobilNet (TN)	Benton	$47,853	$156,033	$203,886	$616,293	$52,297	$668,590	$872,476
GTE MobilNet (TN)	Bledsoe	$21,032	$0	$21,032	$254,536	$0	$254,536	$275,568
GTE MobilNet (TN)	Bradley	$119,945	$346,277	$466,222	$1,618,387	$2,535,752	$4,154,139	$4,620,361
GTE MobilNet (TN)	Campbell	$156,692	$0	$156,692	$1,106,227	$0	$1,106,227	$1,262,919
GTE MobilNet (TN)	Cannon	$112,247	$0	$112,247	$609,889	$0	$609,889	$722,136
GTE MobilNet (TN)	Carroll	$258,175	$85,289	$343,464	$1,391,824	$29,505	$1,421,329	$1,764,793
GTE MobilNet (TN)	Carter	$164,749	$135,337	$300,086	$768,339	$598,753	$1,367,092	$1,667,178
GTE MobilNet (TN)	Chester	$52,850	$0	$52,850	$423,611	$0	$423,611	$476,461
GTE MobilNet (TN)	Claiborne	$101,176	$0	$101,176	$365,455	$0	$365,455	$466,631
GTE MobilNet (TN)	Clay	$0	$0	$0	$300,486	$0	$300,486	$300,486
GTE MobilNet (TN)	Coffee	$258,743	$147,910	$406,653	$2,002,808	$1,293,627	$3,296,435	$3,703,088
GTE MobilNet (TN)	Crockett	$225,960	$41,631	$267,591	$795,207	$26,617	$821,824	$1,089,415
GTE MobilNet (TN)	Cumberland	$1,029,732	$108,585	$1,138,317	$2,170,365	$369,015	$2,539,380	$3,677,697
GTE MobilNet (TN)	Decatur	$103,505	$0	$103,505	$558,188	$0	$558,188	$661,693
GTE MobilNet (TN)	DeKalb	$64,776	$0	$64,776	$637,880	$0	$637,880	$702,656
GTE MobilNet (TN)	Dyer	$102,403	$79,958	$182,361	$2,146,085	$423,389	$2,569,474	$2,751,835
GTE MobilNet (TN)	Fayette	$130,806	$0	$130,806	$1,689,720	$0	$1,689,720	$1,820,526
GTE MobilNet (TN)	Fentress	$52,452	$0	$52,452	$544,090	$0	$544,090	$596,542
GTE MobilNet (TN)	Franklin	$114,198	$0	$114,198	$548,503	$0	$548,503	$662,701
GTE MobilNet (TN)	Gibson	$213,920	$0	$213,920	$2,054,444	$0	$2,054,444	$2,268,364
GTE MobilNet (TN)	Giles	$31,779	$98,855	$130,634	$387,154	$845,409	$1,232,563	$1,363,197

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
GTE MobilNet (TN)	Grundy	$0	$31,586	$31,586	$0	$823,978	$823,978	$855,564
GTE MobilNet (TN)	Hardeman	$56,136	$0	$56,136	$789,349	$0	$789,349	$845,485
GTE MobilNet (TN)	Hardin	$160,313	$52,697	$213,010	$994,405	$214,078	$1,208,483	$1,421,493
GTE MobilNet (TN)	Hawkins	$49,640	$72,111	$121,751	$537,374	$407,729	$945,103	$1,066,854
GTE MobilNet (TN)	Haywood	$296,223	$0	$296,223	$2,295,524	$0	$2,295,524	$2,591,747
GTE MobilNet (TN)	Henderson	$349,965	$0	$349,965	$1,540,036	$0	$1,540,036	$1,890,001
GTE MobilNet (TN)	Henry	$147,910	$0	$147,910	$1,253,488	$0	$1,253,488	$1,401,398
GTE MobilNet (TN)	Hickman	$49,793	$72,119	$121,912	$1,196,116	$223,881	$1,419,997	$1,541,909
GTE MobilNet (TN)	Humphreys	$13,723	$31,356	$45,079	$578,452	$193,328	$771,780	$816,859
GTE MobilNet (TN)	Knox	$6,432	$0	$6,432	$0	$0	$0	$6,432
GTE MobilNet (TN)	Lake	$0	$0	$0	$233,186	$0	$233,186	$233,186
GTE MobilNet (TN)	Lauderdale	$52,160	$0	$52,160	$631,722	$0	$631,722	$683,882
GTE MobilNet (TN)	Lawrence	$50,986	$53,630	$104,616	$830,454	$318,851	$1,149,305	$1,253,921
GTE MobilNet (TN)	Lewis	$0	$0	$0	$0	$272,798	$272,798	$272,798
GTE MobilNet (TN)	Lincoln	$80,184	$0	$80,184	$1,022,846	$0	$1,022,846	$1,103,030
GTE MobilNet (TN)	Loudon	$62,031	$121,921	$183,952	$1,065,039	$669,994	$1,735,033	$1,918,985
GTE MobilNet (TN)	Macon	$89,744	$0	$89,744	$536,453	$0	$536,453	$626,197
GTE MobilNet (TN)	Madison	$288,527	$462,595	$751,122	$3,524,829	$2,220,873	$5,745,702	$6,496,824
GTE MobilNet (TN)	Marshall	$47,499	$0	$47,499	$1,383,339	$0	$1,383,339	$1,430,838
GTE MobilNet (TN)	Maury	$116,033	$245,744	$361,777	$1,770,765	$1,734,581	$3,505,346	$3,867,123
GTE MobilNet (TN)	McMinn	$344,650	$206,957	$551,607	$1,865,626	$1,966,959	$3,832,585	$4,384,192
GTE MobilNet (TN)	McNairy	$53,015	$0	$53,015	$663,730	$0	$663,730	$716,745
GTE MobilNet (TN)	Meigs	$35,725	$0	$35,725	$0	$0	$0	$35,725
GTE MobilNet (TN)	Monroe	$79,088	$0	$79,088	$1,862,174	$0	$1,862,174	$1,941,262
GTE MobilNet (TN)	Moore	$33,923	$97,156	$131,079	$225,113	$106,659	$331,772	$462,851
GTE MobilNet (TN)	Morgan	$0	$34,533	$34,533	$0	$275,577	$275,577	$310,110
GTE MobilNet (TN)	Obion	$121,453	$0	$121,453	$707,731	$0	$707,731	$829,184
GTE MobilNet (TN)	Overton	$2,421	$0	$2,421	$287,032	$0	$287,032	$289,453
GTE MobilNet (TN)	Perry	$0	$24,231	$24,231	$160,964	$139,184	$300,148	$324,379
GTE MobilNet (TN)	Polk	$333,967	$0	$333,967	$766,037	$0	$766,037	$1,100,004
GTE MobilNet (TN)	Putnam	$324,517	$178,657	$503,174	$3,019,140	$1,235,901	$4,255,041	$4,758,215
GTE MobilNet (TN)	Rhea	$49,642	$79,394	$129,036	$1,151,122	$0	$1,151,122	$1,280,158
GTE MobilNet (TN)	Roane	$557,179	$347,573	$904,752	$2,656,275	$663,063	$3,319,338	$4,224,090

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
GTE MobilNet (TN)	Robertson	$3,788	$0	$3,788	$0	$0	$0	$3,788
GTE MobilNet (TN)	Rutherford	$51,552	$0	$51,552	$0	$0	$0	$51,552
GTE MobilNet (TN)	Scott	$92,248	$0	$92,248	$298,680	$0	$298,680	$390,928
GTE MobilNet (TN)	Smith	$524,145	$0	$524,145	$879,115	$0	$879,115	$1,403,260
GTE MobilNet (TN)	Stewart	$0	$0	$0	$228,991	$0	$228,991	$228,991
GTE MobilNet (TN)	Sullivan	$477,889	$455,654	$933,543	$4,040,853	$4,734,123	$8,774,976	$9,708,519
GTE MobilNet (TN)	Trousdale	$0	$50,078	$50,078	$0	$40,433	$40,433	$90,511
GTE MobilNet (TN)	Unicoi	$0	$0	$0	$581,978	$0	$581,978	$581,978
GTE MobilNet (TN)	Warren	$239,886	$81,327	$321,213	$1,392,726	$265,071	$1,657,797	$1,979,010
GTE MobilNet (TN)	Washington	$342,630	$238,811	$581,441	$3,853,300	$592,012	$4,445,312	$5,026,753
GTE MobilNet (TN)	Wayne	$98,823	$0	$98,823	$732,157	$0	$732,157	$830,980
GTE MobilNet (TN)	Weakley	$65,791	$72,056	$137,847	$760,266	$0	$760,266	$898,113
GTE MobilNet (TN)	White	$93,490	$0	$93,490	$676,171	$0	$676,171	$769,661
GTE MobilNet (TN)	**Total**	**$9,443,539**	**$4,688,432**	**$14,131,971**	**$71,492,846**	**$24,780,889**	**$96,273,735**	**$110,405,706**
GTE MobilNet (Nash)	Cheatham	$107,474	$74,338	$181,812	$2,145,763	$416,931	$2,562,694	$2,744,506
GTE MobilNet (Nash)	Davidson	$1,452,898	$5,501,167	$6,954,065	$25,271,266	$81,398,918	$106,670,184	$113,624,249
GTE MobilNet (Nash)	Dickson	$268,224	$22,920	$291,144	$3,503,238	$0	$3,503,238	$3,794,382
GTE MobilNet (Nash)	Macon	$0	$50,078	$50,078	$0	$31,062	$31,062	$81,140
GTE MobilNet (Nash)	Robertson	$160,202	$77,821	$238,023	$2,897,576	$722,058	$3,619,634	$3,857,657
GTE MobilNet (Nash)	Rutherford	$291,413	$599,578	$890,991	$4,925,277	$7,912,495	$12,837,772	$13,728,763
GTE MobilNet (Nash)	Sumner	$218,374	$223,214	$441,588	$4,861,110	$2,175,403	$7,036,513	$7,478,101
GTE MobilNet (Nash)	Williamson	$1,583,800	$577,056	$2,160,856	$7,351,180	$5,298,467	$12,649,647	$14,810,503
GTE MobilNet (Nash)	Wilson	$423,085	$208,733	$631,818	$6,201,454	$2,710,942	$8,912,396	$9,544,214
GTE MobilNet (Nash)	**Total**	**$4,505,470**	**$7,334,905**	**$11,840,375**	**$57,156,864**	**$100,666,276**	**$157,823,140**	**$169,663,515**
GTE MobilNet (Clarksv)	Montgomery	$167,608	$472,977	$640,585	$3,692,572	$3,466,493	$7,159,065	$7,799,650
GTE MobilNet (Clarksv)	Stewart	$45,387	$0	$45,387	$193,059	$0	$193,059	$238,446
GTE MobilNet (Clarksv	**Total**	**$212,995**	**$472,977**	**$685,972**	**$3,885,631**	**$3,466,493**	**$7,352,124**	**$8,038,096**
BellSouth Personal Com	Anderson	$1,344,545	$1,301,272	$2,645,817	$979,445	$833,838	$1,813,283	$4,459,100
BellSouth Personal Com	Blount	$1,062,579	$1,400,776	$2,463,355	$931,682	$1,591,946	$2,523,628	$4,986,983
BellSouth Personal Com	Campbell	$425,358	$846	$426,204	$1,066,829	$145,381	$1,212,210	$1,638,414

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		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
BellSouth Personal Com	Carter	$2,450	$332,690	$335,140	$334,782	$696,325	$1,031,107	$1,366,247
BellSouth Personal Com	Cocke	$231,718	$90,423	$322,141	$268,603	$116,311	$384,914	$707,055
BellSouth Personal Com	Cumberland	$270,855	$42,540	$313,395	$308,785	$710,696	$1,019,481	$1,332,876
BellSouth Personal Com	Grainger	$2,588	$5,737	$8,325	$116,728	$345,311	$462,039	$470,364
BellSouth Personal Com	Greene	$1,098,399	$1,007,680	$2,106,079	$946,985	$957,889	$1,904,874	$4,010,953
BellSouth Personal Com	Hamblen	$513,767	$259,111	$772,878	$549,421	$417,413	$966,834	$1,739,712
BellSouth Personal Com	Hawkins	$372,270	$568,327	$940,597	$189,624	$730,939	$920,563	$1,861,160
BellSouth Personal Com	Jefferson	$971,980	$730,150	$1,702,130	$515,356	$750,844	$1,266,200	$2,968,330
BellSouth Personal Com	Knox	$3,346,255	$8,073,325	$11,419,580	$17,540,602	$10,153,304	$27,693,906	$39,113,486
BellSouth Personal Com	Loudon	$355,756	$836,812	$1,192,568	$212,218	$982,489	$1,194,707	$2,387,275
BellSouth Personal Com	McMinn	$236,718	$270,245	$506,963	$487,127	$757,478	$1,244,605	$1,751,568
BellSouth Personal Com	Monroe	$0	$7,943	$7,943	$0	$616,509	$616,509	$624,452
BellSouth Personal Com	Morgan	$61,492	$0	$61,492	$828,590	$0	$828,590	$890,082
BellSouth Personal Com	Roane	$381,022	$354,656	$735,678	$283,275	$1,063,773	$1,347,048	$2,082,726
BellSouth Personal Com	Sevier	$653,321	$551,400	$1,204,721	$992,248	$962,644	$1,954,892	$3,159,613
BellSouth Personal Com	Sullivan	$847,586	$2,254,939	$3,102,525	$718,969	$2,635,486	$3,354,455	$6,456,980
BellSouth Personal Com	Unicoi	$0	$333,382	$333,382	$0	$99,068	$99,068	$432,450
BellSouth Personal Com	Union	$1,682	$0	$1,682	$503,182	$0	$503,182	$504,864
BellSouth Personal Com	Washington	$744,938	$952,726	$1,697,664	$780,579	$2,045,655	$2,826,234	$4,523,898
BellSouth Personal Co	**Total**	**$12,925,279**	**$19,374,980**	**$32,300,259**	**$28,555,030**	**$26,613,299**	**$55,168,329**	**$87,468,588**
Chattanooga MSA	Bradley	$0	$0	$0	$3,213	$0	$3,213	$3,213
Chattanooga MSA	Davidson	$0	$140,823	$140,823	$2,298	$218,631	$220,929	$361,752
Chattanooga MSA	Hamilton	$1,240,228	$5,259,059	$6,499,287	$1,061,059	$6,912,268	$7,973,327	$14,472,614
Chattanooga MSA	Marion	$644,606	$76,736	$721,342	$673,831	$157,839	$831,670	$1,553,012
Chattanooga MSA	Sequatchie	$230,585	$0	$230,585	$107,597	$0	$107,597	$338,182
Chattanooga MSA	**Total**	**$2,115,419**	**$5,476,618**	**$7,592,037**	**$1,847,998**	**$7,288,738**	**$9,136,736**	**$16,728,773**
Tennessee RSA	Chester	$0	$0	$0	$0	$3,211	$3,211	$3,211
Tennessee RSA	Davidson	$0	$55,806	$55,806	$0	$205,954	$205,954	$261,760
Tennessee RSA	Decatur	$5,896	$94,868	$100,764	$95,416	$121,596	$217,012	$317,776
Tennessee RSA	Fayette	$851,716	$0	$851,716	$1,036,706	$0	$1,036,706	$1,888,422
Tennessee RSA	Gibson	$0	$357,514	$357,514	$0	$462,100	$462,100	$819,614

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		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Tennessee RSA	Hardin	$0	$0	$0	$18,988	$1,605	$20,593	$20,593
Tennessee RSA	Haywood	$417,545	$0	$417,545	$735,080	$0	$735,080	$1,152,625
Tennessee RSA	Henderson	$629,152	$0	$629,152	$488,626	$0	$488,626	$1,117,778
Tennessee RSA	Lauderdale	$0	$1,820,638	$1,820,638	$0	$149,666	$149,666	$1,970,304
Tennessee RSA	Madison	$704,440	$1,553,942	$2,258,382	$497,164	$1,400,602	$1,897,766	$4,156,148
Tennessee RSA	McNairy	$0	$0	$0	$0	$839	$839	$839
Tennessee RSA	Shelby	$0	$0	$0	$0	$54,020	$54,020	$54,020
Tennessee RSA	**Total**	**$2,608,749**	**$3,882,768**	**$6,491,517**	**$2,871,980**	**$2,399,593**	**$5,271,573**	**$11,763,090**
Memphis CGSA	Haywood	$0	$0	$0	$63,441	$0	$63,441	$63,441
Memphis CGSA	Henderson	$0	$0	$0	$593	$0	$593	$593
Memphis CGSA	Madison	$0	$0	$0	$196,165	$0	$196,165	$196,165
Memphis CGSA	Shelby	$2,695,925	$0	$2,695,925	$261,519	$6,936	$268,455	$2,964,380
Memphis CGSA	**Total**	**$2,695,925**	**$0**	**$2,695,925**	**$521,718**	**$6,936**	**$528,654**	**$3,224,579**
Westel-Milwaukee	Bedford	$569,435	$0	$569,435	$188,704	$0	$188,704	$758,139
Westel-Milwaukee	Benton	$401,116	$0	$401,116	$281,422	$0	$281,422	$682,538
Westel-Milwaukee	Bradley	$0	$0	$0	$9,659	$0	$9,659	$9,659
Westel-Milwaukee	Carroll	$446,222	$0	$446,222	$382,518	$0	$382,518	$828,740
Westel-Milwaukee	Cheatham	$0	$296,170	$296,170	$0	$210,864	$210,864	$507,034
Westel-Milwaukee	Davidson	$2,977,464	$12,774,878	$15,752,342	$3,298,206	$19,135,547	$22,433,753	$38,186,095
Westel-Milwaukee	Dickson	$165,368	$72,791	$238,159	$575,188	$153,871	$729,059	$967,218
Westel-Milwaukee	Franklin	$0	$403,856	$403,856	$0	$243,868	$243,868	$647,724
Westel-Milwaukee	Gibson	$0	$0	$0	$0	$3,263	$3,263	$3,263
Westel-Milwaukee	Giles	$51,977	$32,473	$84,450	$83,051	$62,809	$145,860	$230,310
Westel-Milwaukee	Hamilton	$0	$8,768	$8,768	$0	$9,606	$9,606	$18,374
Westel-Milwaukee	Hickman	$217,682	$79,691	$297,373	$233,123	$151,678	$384,801	$682,174
Westel-Milwaukee	Houston	$110,768	$0	$110,768	$160,990	$0	$160,990	$271,758
Westel-Milwaukee	Humphreys	$264,126	$308,091	$572,217	$65,546	$457,407	$522,953	$1,095,170
Westel-Milwaukee	Lawrence	$306,287	$0	$306,287	$480,228	$0	$480,228	$786,515
Westel-Milwaukee	Lewis	$0	$242,483	$242,483	$0	$276,962	$276,962	$519,445
Westel-Milwaukee	Lincoln	$446,231	$0	$446,231	$322,423	$0	$322,423	$768,654
Westel-Milwaukee	Marshall	$358,772	$240,524	$599,296	$181,072	$132,930	$314,002	$913,298

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		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Westel-Milwaukee	Maury	$241,410	$227,712	$469,122	$299,866	$600,018	$899,884	$1,369,006
Westel-Milwaukee	Montgomery	$384,883	$1,051,661	$1,436,544	$541,072	$1,250,115	$1,791,187	$3,227,731
Westel-Milwaukee	Perry	$217,881	$0	$217,881	$153,486	$0	$153,486	$371,367
Westel-Milwaukee	Robertson	$529,088	$203,800	$732,888	$796,669	$156,215	$952,884	$1,685,772
Westel-Milwaukee	Rutherford	$555,406	$1,501,710	$2,057,116	$413,551	$1,212,216	$1,625,767	$3,682,883
Westel-Milwaukee	Stewart	$83,666	$46,858	$130,524	$552,052	$186,076	$738,128	$868,652
Westel-Milwaukee	Sumner	$607,482	$807,628	$1,415,110	$749,380	$693,442	$1,442,822	$2,857,932
Westel-Milwaukee	Wayne	$36,725	$237,401	$274,126	$143,216	$190,259	$333,475	$607,601
Westel-Milwaukee	Williamson	$1,092,358	$1,990,712	$3,083,070	$1,462,712	$3,697,918	$5,160,630	$8,243,700
Westel-Milwaukee	Wilson	$992,266	$467,544	$1,459,810	$988,511	$392,854	$1,381,365	$2,841,175
Westel-Milwaukee	**Total**	**$11,056,613**	**$20,994,751**	**$32,051,364**	**$12,362,645**	**$29,217,918**	**$41,580,563**	**$73,631,927**
NE Mississippi Cellular	Shelby	$0	$2,660	$2,660	$0	$72,677	$72,677	$75,337
NE Mississippi Cellula	**Total**	**$0**	**$2,660**	**$2,660**	**$0**	**$72,677**	**$72,677**	**$75,337**
Memphis SMSA Lmtd	Chester	$0	$0	$0	$0	$3,263	$3,263	$3,263
Memphis SMSA Lmtd	Decatur	$0	$0	$0	$10,861	$0	$10,861	$10,861
Memphis SMSA Lmtd	Fayette	$0	$0	$0	$3,263	$0	$3,263	$3,263
Memphis SMSA Lmtd	Gibson	$0	$0	$0	$0	$6,361	$6,361	$6,361
Memphis SMSA Lmtd	Hardeman	$0	$0	$0	$0	$3,263	$3,263	$3,263
Memphis SMSA Lmtd	Hardin	$0	$0	$0	$0	$4,263	$4,263	$4,263
Memphis SMSA Lmtd	Haywood	$0	$0	$0	$5,251	$0	$5,251	$5,251
Memphis SMSA Lmtd	Henderson	$0	$0	$0	$3,263	$0	$3,263	$3,263
Memphis SMSA Lmtd	Lauderdale	$0	$0	$0	$0	$3,263	$3,263	$3,263
Memphis SMSA Lmtd	Madison	$0	$78,927	$78,927	$9,681	$47,095	$56,776	$135,703
Memphis SMSA Lmtd	Shelby	$2,551,997	$19,296,679	$21,848,676	$4,308,510	$31,376,371	$35,684,881	$57,533,557
Memphis SMSA Lmtd	**Total**	**$2,551,997**	**$19,375,606**	**$21,927,603**	**$4,340,829**	**$31,443,879**	**$35,784,708**	**$57,712,311**
M-T Cellular	Chester	$223,913	$69,914	$293,827	$106,472	$371,219	$477,691	$771,518
M-T Cellular	Hardeman	$0	$292,698	$292,698	$0	$209,230	$209,230	$501,928
M-T Cellular	Hardin	$69,533	$66,205	$135,738	$138,383	$147,417	$285,800	$421,538
M-T Cellular	Madison	$0	$0	$0	$0	$4,683	$4,683	$4,683
M-T Cellular	McNairy	$223,461	$453,309	$676,770	$142,030	$534,962	$676,992	$1,353,762

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		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
M-T Cellular	Shelby	$0	$0	$0	$0	$39,017	$39,017	$39,017
M-T Cellular	**Total**	**$516,907**	**$882,126**	**$1,399,033**	**$386,885**	**$1,306,528**	**$1,693,413**	**$3,092,446**
U.S. Cellular Tel. Co.	Anderson	$947,342	$1,139,901	$2,087,243	$1,674,196	$1,595,437	$3,269,633	$5,356,876
U.S. Cellular Tel. Co.	Blount	$489,927	$1,778,347	$2,268,274	$609,342	$3,701,507	$4,310,849	$6,579,123
U.S. Cellular Tel. Co.	Bradley	$79,027	$0	$79,027	$246,245	$0	$246,245	$325,272
U.S. Cellular Tel. Co.	Grainger	$377,904	$0	$377,904	$0	$0	$0	$377,904
U.S. Cellular Tel. Co.	Knox	$4,747,011	$6,952,802	$11,699,813	$10,612,136	$24,098,610	$34,710,746	$46,410,559
U.S. Cellular Tel. Co.	Loudon	$308,897	$349,288	$658,185	$329,893	$600,260	$930,153	$1,588,338
U.S. Cellular Tel. Co.	McMinn	$376,649	$598,941	$975,590	$776,133	$364,639	$1,140,772	$2,116,362
U.S. Cellular Tel. Co.	Monroe	$342,106	$135,707	$477,813	$394,741	$185,839	$580,580	$1,058,393
U.S. Cellular Tel. Co.	Rhea	$304,452	$0	$304,452	$199,616	$0	$199,616	$504,068
U.S. Cellular Tel. Co.	Union	$236,619	$377,145	$613,764	$217,048	$139,584	$356,632	$970,396
U.S. Cellular Tel. Co.	**Total**	**$7,973,315**	**$10,954,986**	**$18,928,301**	**$14,842,302**	**$30,546,292**	**$45,388,594**	**$64,316,895**
Tennessee RSA #4	Cocke	$781,217	$0	$781,217	$647,721	$0	$647,721	$1,428,938
Tennessee RSA #4	Jefferson	$625,475	$385,730	$1,011,205	$781,449	$103,815	$885,264	$1,896,469
Tennessee RSA #4	Sevier	$588,731	$1,437,389	$2,026,120	$1,522,304	$1,790,135	$3,312,439	$5,338,559
Tennessee RSA #4	**Total**	**$1,995,423**	**$1,823,119**	**$3,818,542**	**$2,951,474**	**$1,893,950**	**$4,845,424**	**$8,663,966**
Tennessee RSA #3	Campbell	$657,352	$208,796	$866,148	$798,354	$121,515	$919,869	$1,786,017
Tennessee RSA #3	Claiborne	$207,587	$0	$207,587	$294,116	$0	$294,116	$501,703
Tennessee RSA #3	Clay	$0	$385,997	$385,997	$0	$247,376	$247,376	$633,373
Tennessee RSA #3	Cumberland	$1,297,233	$0	$1,297,233	$1,556,702	$0	$1,556,702	$2,853,935
Tennessee RSA #3	Fentress	$751,282	$0	$751,282	$3,470,966	$0	$3,470,966	$4,222,248
Tennessee RSA #3	Jackson	$239,117	$0	$239,117	$273,354	$0	$273,354	$512,471
Tennessee RSA #3	Macon	$247,406	$491,925	$739,331	$239,122	$215,681	$454,803	$1,194,134
Tennessee RSA #3	Morgan	$218,622	$121,667	$340,289	$199,517	$142,502	$342,019	$682,308
Tennessee RSA #3	Overton	$498,417	$0	$498,417	$603,786	$0	$603,786	$1,102,203
Tennessee RSA #3	Pickett	$260,660	$0	$260,660	$158,326	$0	$158,326	$418,986
Tennessee RSA #3	Putnam	$1,264,355	$1,138,953	$2,403,308	$1,339,526	$1,129,102	$2,468,628	$4,871,936
Tennessee RSA #3	Roane	$1,061,170	$0	$1,061,170	$1,021,392	$0	$1,021,392	$2,082,562
Tennessee RSA #3	Scott	$290,911	$0	$290,911	$447,218	$0	$447,218	$738,129

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Tennessee RSA #3	Trousdale	$0	$293,133	$293,133	$0	$115,686	$115,686	$408,819
Tennessee RSA #3	**Total**	**$6,994,112**	**$2,640,471**	**$9,634,583**	**$10,402,379**	**$1,971,862**	**$12,374,241**	**$22,008,824**
ALLTEL- Mountain City	Johnson	$79,060	$0	$79,060	$374,953	$0	$374,953	$454,013
ALLTEL- Mountain Cit	**Total**	**$79,060**	**$0**	**$79,060**	**$374,953**	**$0**	**$374,953**	**$454,013**
TeleCorp Comm.	Benton	$0	$0	$0	$0	$191,737	$191,737	$191,737
TeleCorp Comm.	Carroll	$0	$0	$0	$0	$1,368,209	$1,368,209	$1,368,209
TeleCorp Comm.	Crockett	$0	$0	$0	$0	$378,245	$378,245	$378,245
TeleCorp Comm.	Dyer	$0	$0	$0	$0	$1,177,783	$1,177,783	$1,177,783
TeleCorp Comm.	Fayette	$0	$0	$0	$340,094	$907,377	$1,247,471	$1,247,471
TeleCorp Comm.	Franklin	$0	$0	$0	$0	$235,621	$235,621	$235,621
TeleCorp Comm.	Gibson	$0	$0	$0	$250,885	$1,658,511	$1,909,396	$1,909,396
TeleCorp Comm.	Haywood	$0	$0	$0	$255,273	$1,215,241	$1,470,514	$1,470,514
TeleCorp Comm.	Henderson	$0	$0	$0	$0	$1,243,625	$1,243,625	$1,243,625
TeleCorp Comm.	Lauderdale	$0	$0	$0	$0	$580,030	$580,030	$580,030
TeleCorp Comm.	Macon	$0	$0	$0	$221,320	$0	$221,320	$221,320
TeleCorp Comm.	Madison	$0	$0	$0	$308,050	$3,226,628	$3,534,678	$3,534,678
TeleCorp Comm.	Marshall	$0	$0	$0	$0	$165,804	$165,804	$165,804
TeleCorp Comm.	Montgomery	$0	$0	$0	$0	$243,891	$243,891	$243,891
TeleCorp Comm.	Obion	$0	$0	$0	$194,069	$709,158	$903,227	$903,227
TeleCorp Comm.	Shelby	$0	$0	$0	$1,169,289	$47,216,462	$48,385,751	$48,385,751
TeleCorp Comm.	Tipton	$0	$0	$0	$434,396	$764,001	$1,198,397	$1,198,397
TeleCorp Comm.	Weakley	$0	$0	$0	$0	$1,180,992	$1,180,992	$1,180,992
TeleCorp Comm.	**Total**	**$0**	**$0**	**$0**	**$3,173,376**	**$62,463,315**	**$65,636,691**	**$65,636,691**
ALLTEL- Greene Count	Greene	$248,871	$130,521	$379,392	$679,415	$398,227	$1,077,642	$1,457,034
ALLTEL- Greene Count	Hamblen	$222,790	$148,002	$370,792	$280,898	$718,506	$999,404	$1,370,196
ALLTEL- Greene Count	Hawkins	$139,243	$0	$139,243	$223,123	$0	$223,123	$362,366
ALLTEL- Greene Coun	**Total**	**$610,904**	**$278,523**	**$889,427**	**$1,183,436**	**$1,116,733**	**$2,300,169**	**$3,189,596**
Verizon South	Bedford	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Cannon	$0	$0	$0	$22,171	$0	$22,171	$22,171

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Verizon South	Coffee	$0	$0	$0	$44,343	$0	$44,343	$44,343
Verizon South	Cumberland	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Davidson	$0	$0	$0	$0	$203,397	$203,397	$203,397
Verizon South	Dickson	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Dyer	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Gibson	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Haywood	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Henderson	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Knox	$0	$0	$0	$0	$231,841	$231,841	$231,841
Verizon South	Lauderdale	$0	$0	$0	$22,397	$0	$22,397	$22,397
Verizon South	Loudon	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Maury	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	McMinn	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Putnam	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	Shelby	$0	$0	$0	$0	$233,566	$233,566	$233,566
Verizon South	Smith	$0	$0	$0	$22,171	$0	$22,171	$22,171
Verizon South	**Total**	**$0**	**$0**	**$0**	**$354,963**	**$668,804**	**$1,023,767**	**$1,023,767**
Yorkville Comm.	Henry	$151,695	$12,565	$164,260	$992,613	$38,500	$1,031,113	$1,195,373
Yorkville Comm.	Weakley	$79,482	$0	$79,482	$294,627	$29,212	$323,839	$403,321
Yorkville Comm.	**Total**	**$231,177**	**$12,565**	**$243,742**	**$1,287,240**	**$67,712**	**$1,354,952**	**$1,598,694**
LA Unwired	Giles	$177,724	$0	$177,724	$368,884	$0	$368,884	$546,608
LA Unwired	Marshall	$59,424	$0	$59,424	$329,296	$0	$329,296	$388,720
LA Unwired	**Total**	**$237,148**	**$0**	**$237,148**	**$698,180**	**$0**	**$698,180**	**$935,328**
NPCR, Inc.	Carter	$0	$108,174	$108,174	$0	$363,742	$363,742	$471,916
NPCR, Inc.	Greene	$0	$170,568	$170,568	$0	$495,073	$495,073	$665,641
NPCR, Inc.	Hawkins	$0	$55,230	$55,230	$0	$160,474	$160,474	$215,704
NPCR, Inc.	Sullivan	$0	$355,892	$355,892	$0	$1,344,635	$1,344,635	$1,700,527
NPCR, Inc.	Unicoi	$0	$27,611	$27,611	$0	$53,191	$53,191	$80,802
NPCR, Inc.	Washington	$0	$275,125	$275,125	$0	$887,239	$887,239	$1,162,364
NPCR, Inc.	**Total**	**$0**	**$992,600**	**$992,600**	**$0**	**$3,304,354**	**$3,304,354**	**$4,296,954**

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Alltell Comm., Inc.	Carter	$873,522	0	$873,522	$1,542,103	$0	$1,542,103	$2,415,625
Alltell Comm., Inc.	Greene	$101,422	$0	$101,422	$588,847	$22,321	$611,168	$712,590
Alltell Comm., Inc.	Hamblen	$0	$189,633	$189,633	$0	$237,117	$237,117	$426,750
Alltell Comm., Inc.	Hawkins	$722,981	$0	$722,981	$1,671,313	$0	$1,671,313	$2,394,294
Alltell Comm., Inc.	Johnson	$0	$0	$0	$16,877	$0	$16,877	$16,877
Alltell Comm., Inc.	Sullivan	$4,221,802	$921,472	$5,143,274	$16,392,608	$4,018,546	$20,411,154	$25,554,428
Alltell Comm., Inc.	Unicoi	$224,389	$0	$224,389	$248,888	$0	$248,888	$473,277
Alltell Comm., Inc.	Washington	$2,457,084	$0	$2,457,084	$7,159,071	$0	$7,159,071	$9,616,155
Alltell Comm., Inc.	**Total**	**$8,601,200**	**$1,111,105**	**$9,712,305**	**$27,619,707**	**$4,277,984**	**$31,897,691**	**$41,609,996**
Aircell, Inc.	Cumberland	$0	$0	$0	$11,081	$0	$11,081	$11,081
Aircell, Inc.	Macon	$0	$0	$0	$19,425	$0	$19,425	$19,425
Aircell, Inc.	**Total**	**$0**	**$0**	**$0**	**$30,506**	**$0**	**$30,506**	**$30,506**
Cricket Communications	Anderson	$0	$79,380	$79,380	$0	$456,244	$456,244	$535,624
Cricket Communications	Blount	$0	$118,413	$118,413	$0	$684,366	$684,366	$802,779
Cricket Communications	Cheatham	$0	$106,352	$106,352	$0	$114,061	$114,061	$220,413
Cricket Communications	Davidson	$0	$10,203,431	$10,203,431	$0	$21,004,749	$21,004,749	$31,208,180
Cricket Communications	Hamilton	$0	$5,431,165	$5,431,165	$0	$8,823,791	$8,823,791	$14,254,956
Cricket Communications	Knox	$0	$1,814,428	$1,814,428	$0	$14,694,099	$14,694,099	$16,508,527
Cricket Communications	Maury	$0	$664,465	$664,465	$0	$684,366	$684,366	$1,348,831
Cricket Communications	Montgomery	$0	$693,163	$693,163	$0	$1,140,610	$1,140,610	$1,833,773
Cricket Communications	Robertson	$0	$302,976	$302,976	$0	$342,183	$342,183	$645,159
Cricket Communications	Rutherford	$0	$1,718,911	$1,718,911	$0	$1,540,100	$1,540,100	$3,259,011
Cricket Communications	Sevier	$0	$61,322	$61,322	$0	$342,183	$342,183	$403,505
Cricket Communications	Shelby	$0	$4,260,609	$4,260,609	$0	$16,708,240	$16,708,240	$20,968,849
Cricket Communications	Sumner	$0	$404,073	$404,073	$0	$342,183	$342,183	$746,256
Cricket Communications	Williamson	$0	$2,188,903	$2,188,903	$0	$1,596,854	$1,596,854	$3,785,757
Cricket Communications	Wilson	$0	$1,699,017	$1,699,017	$0	$1,596,854	$1,596,854	$3,295,871
Cricket Communicatio	**Total**	**$0**	**$29,746,608**	**$29,746,608**	**$0**	**$70,070,883**	**$70,070,883**	**$99,817,491**
Advantage Cellular	Cannon	$64,869	$101,363	$166,232	$435,989	$146,169	$582,158	$748,390

Company	County	Gross Investment in Towers, Buidings, & Land			Gross Investment in Electronic Equipment			Combined Total
		Outside Cities	Inside Cities	Total	Outside Cities	Inside Cities	Total	
Advantage Cellular	Coffee	$244,982	$81,907	$326,889	$431,292	$162,238	$593,530	$920,419
Advantage Cellular	DeKalb	$128,323	$261,049	$389,372	$211,168	$2,179,987	$2,391,155	$2,780,527
Advantage Cellular	Grundy	$152,637	$0	$152,637	$324,928	$272,925	$597,853	$750,490
Advantage Cellular	Smith	$378,131	$0	$378,131	$742,268	$0	$742,268	$1,120,399
Advantage Cellular	Van Buren	$27,388	$0	$27,388	$110,596	$166,979	$277,575	$304,963
Advantage Cellular	Warren	$211,534	$26,955	$238,489	$393,227	$268,588	$661,815	$900,304
Advantage Cellular	White	$178,350	$0	$178,350	$544,252	$0	$544,252	$722,602
Advantage Cellular	**Total**	**$1,386,214**	**$471,274**	**$1,857,488**	**$3,193,720**	**$3,196,886**	**$6,390,606**	**$8,248,094**
ACC of Tennessee	Cocke	$45,722	$3,832	$49,554	$551,947	$11,666	$563,613	$613,167
ACC of Tennessee	Grainger	$213,419	$0	$213,419	$490,728	$0	$490,728	$704,147
ACC of Tennessee	Greene	$250,422	$97,049	$347,471	$1,331,291	$358,938	$1,690,229	$2,037,700
ACC of Tennessee	Hamblen	$91,945	$6,445	$98,390	$3,104,678	$33,559	$3,138,237	$3,236,627
ACC of Tennessee	Jefferson	$437,798	$5,827	$443,625	$1,767,186	$41,107	$1,808,293	$2,251,918
ACC of Tennessee	Sevier	$812,769	$15,221	$827,990	$2,249,677	$22,684	$2,272,361	$3,100,351
ACC of Tennessee	**Total**	**$1,852,075**	**$128,374**	**$1,980,449**	**$9,495,507**	**$467,954**	**$9,963,461**	**$11,943,910**
Total		**$83,165,011**	**$136,175,032**	**$219,340,043**	**$290,676,112**	**$476,408,684**	**$767,084,796**	**$986,424,839**

Appendix F

Wireless Company Contacts

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Knoxville, TN 37923

Tennessee RSA #3 Limited Partnership

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Tennessee RSA #4 sub 2, Inc.
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United States Cellular Telephone Company, LP
Tennessee RSA #4 sub 2, Inc.

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TeleCorp Communications, Inc.

Mr. Kerry Watson
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Yorkville Communications, Inc.

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Manager, Regulatory Affairs
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SprintCom, Inc.
Sprint Spectrum, LP

Bill Gordon
Vice President, Regulatory Affairs
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AirCell, Inc.

Gary Alstott
Vice President/General Manager
AllTell Communications, Inc.
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AllTell-Tennessee #8
AllTell- Tennessee #4B1
AllTell Communications, Inc.

Ms. Geri Freeman
Regulatory Manager
Leap Wireless
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Cricket Communications, Inc.

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Cellular Marketing Manager
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Advantage Cellular Systems

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Nextel Partners
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Kirkland, WA 98033

Nextel

Bruce Dickson
BellSouth Corporate
5565 Glenridge Connector
Mail Code 524B
Atlanta, GA 30342

BellSouth Personal Communications, LLC
Chattanooga MSA Limited Partnership

Tennessee RSA Limited Partnership
Memphis CGSA, LLC
Westel-Milwaukee Company, LLC
Northeast Mississippi Cellular, LLC
Memphis SMSA Limited Partnership
M-T Cellular, LLC

Anand Gandhi
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Nashville, TN 37203

Verizon South, Inc.
GTE MobilNet of Tennessee, Inc.
GTE MobilNet of Nashville, Inc.
GTE MobilNet of Clarksville, Inc.
Memphis Cellular Telephone Company
Chattanooga Cellular Telephone Company

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ACC of Tennessee, LLC

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Voicestream
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Voicestream

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LA Unwired

Appendix G

Senate Joint Resolution 134

Filed for intro on 03/22/2001

SENATE JOINT RESOLUTION 134
By Cooper

A RESOLUTION Directing a study relative to wireless telecommunications service.

WHEREAS, The members of the General Assembly of the State of Tennessee recognize the need for Tennesseans to have access to clear, uninterrupted, and high quality wireless telecommunications service throughout the State; now, therefore,

BE IT RESOLVED BY THE SENATE OF THE ONE HUNDRED AND SECOND GENERAL ASSEMBLY OF THE STATE OF TENNESSEE, THE HOUSE OF REPRESENTATIVES, CONCURRING, That the Department of Economic and Community Development is hereby directed to conduct a study relative to the provision of adequate wireless telecommunications service in rural and other low-population areas throughout the State.

BE IT FURTHER RESOLVED, That in conducting such study, the Department of Economic and Community Development shall examine the following issues:

(1) The costs involved in erecting additional towers to enable wireless telecommunications service to be more accessible in rural and other low-population areas;

(2) The feasibility of state government and local governments participating in the erection of additional towers in the interest of improving access to wireless telecommunications service for police, fire and emergency personnel;

(3) The feasibility of participating in federal initiatives, interstate compacts and public-private partnerships that would facilitate the erection of new towers to increase wireless telecommunications service coverage in rural and other low-population areas; and

(4) All other aspects of wireless telecommunications service that might affect coverage in rural and other low-population areas.

BE IT FURTHER RESOLVED, That the Comptroller of the Treasury shall provide assistance to the Department of Economic and Community Development in the form of Geographic Information Systems (GIS) data and maps and any other assistance requested by the Commissioner.

BE IT FURTHER RESOLVED, That the Department of Economic and Community Development shall report its findings and recommendations relative to such study, including any proposed legislation, to the Senate Commerce, Labor and Agriculture Committee and the House Commerce Committee of the One Hundred Second General Assembly no later than February 15, 2002.

Senate State and Local Government Committee Amendment #1

FILED
Date _____
Time _____
Clerk _____
Comm. Amdt. _____
_____

Amendment No. 1 to SJR0134

Cohen
Signature of Sponsor

AMEND Senate Joint Resolution No. 134* <HB>

by deleting the language "Department of Economic and Community Development" wherever it appears and substituting instead the language "Tennessee Regulatory Authority"

AND FURTHER AMEND by deleting the language "Commissioner" and substituting instead the language "Chair of the Tennessee Regulatory Authority"

AND FURTHER AMEND by deleting the language "Senate Commerce, Labor and Agriculture Committee and the House Commerce Committee" and substituting instead the language "Senate State and Local Government Committee and the House State and Local Government Committee"

AND FURTHER AMEND by adding the following language between the first and second BE IT FURTHER RESOLVED clauses:

BE IT FURTHER RESOLVED, That the Tennessee Regulatory Authority, in conducting such study, shall consult with the Tennessee Emergency Communications Board to ensure compatibility of the study recommendations with the provision of wireless enhanced 911 service and with standards established for local emergency communications districts.